REMARKS

Previously examined claims 29, 30, 32–42, and 44–55 have been examined and rejected variously under 35 U.S.C. Sections 102 and 103 with claim 52 additionally rejected under Section 112. Claims 49 and 52 have been amended to correct informalities and are not believed to substantively alter the scope of the respective claims. A new dependent claim 56 has been added, thus claims 29, 30, 32–42 and 44–56 are now pending upon entry of the present amendment.

The presently claimed invention is directed to a novel and non-obvious rider-controlled vehicle. The claimed vehicle includes three major components: a statically-stable motive system, a rider platform that tilts and rolls relative to the motive system, and couplings (speed and steering) that translate the tilting and rolling of the rider platform to forward/back and left/right control respectively.

Kamen specifically does not teach a statically stable motive structure, it does not have a rider platform that moves relative to the motive system and it does not have couplings to translate the relative motion of the rider platform to forward/back and left/right controls.

Specifically for Kamen:

A) STATICALLY STABLE MOTIVE SYSTEM

Paragraph [39] cited by the rejection mentions: the Kamen system is statically ***UNSTABLE***. Nowhere does Kamen teach or suggest that one may provide for a statically stable motive system. The rejection asserts that the Kamen reference's use of language that reserves applicability of the Kamen invention to systems having one or more wheels somehow proves that Kamen contemplates statically stable systems.

The undersigned respectfully submits that such a conclusion is unsupported by the language of Kamen – Kamen simply says that:

> "Vehicle 18, however, is statically unstable, and, absent operation of the control loop to maintain dynamic stability, subject 10 will no longer be supported in a standing position and will fall from platform 12. Different numbers of wheels or other ground-contacting members may advantageously be used in various embodiments of the invention as particularly suited to varying applications. Thus, as described in greater detail below, the number of ground-contacting members may be any number equal to, or greater than, one. For many applications, the dimensions of platform 12, and indeed of the entire ground-contacting module, designated generally by numeral 6, are advantageously comparable to the dimensions of the footprint or shoulder width of user 10. Thus transporter 18 may advantageously be used as a mobile work platform or a recreational vehicle such as a golf cart, or as a delivery vehicle."

The rejection fails to provide sufficient detail to demonstrate that the Kamen reference anticipates the claimed invention. Rather, the rejection generally includes selected claim elements and a reference to a paragraph in Kamen that does not provide sufficient detail to Applicant. Particularly the assertion that Kamen somehow teaches or suggests a statically stable system – for example, equating "at least three wheels mounted below the rider support" – page 3, paragraph 39 and page 3, paragraph 40 that the wheels create a static stable support – is respectfully requested to be reconsidered.

Paragraph 40 states:

> Transporter 18 may be operated in a station-keeping mode, wherein balance is maintained substantially at a specified position. Additionally, transporter 18, which may be referred to herein, without limitation, as a "vehicle," may also maintain a fixed position and orientation when the user 10 is not on platform 12. This mode of operation, referred to as a "kickstand" mode, prevents runaway of the vehicle and provides for the safety of the user and other persons. A forceplate 8 or other sensor, disposed on platform 12, detects the presence of a user on the vehicle.

The existence of a kick-stand mode in which a Kamen control system maintains a fixed position and orientation when a Kamen vehicle is not mounted by a rider does not

meet the limitations of the presently recited claims. The undersigned respectfully submits that Paragraph 40 does not suggest or teach that a Kamen vehicle has wheels arranged in a static stable support. The existence of a "station-keeping mode, wherein balance is maintained," clearly implies the intervention of the control loop to maintain such balance. The function of "kickstand" mode" is to prevent the vehicle from rolling away. Since both of these functions are defined as "modes," by definition they are not active in all phases of operation.

Moreover the rejection's assertion that paragraph 40 teaches or suggests a statically stable system is in direct opposition to the language of paragraph 39 in which Kamen explains that its systems are all statically unstable. (Note for clarity: it is possible to have arrangements of three or more wheels that are not statically stable. See, for example, Fig. 2 of Kamen. Additionally, an arrangement of three wheels that are all coaxial would not provide a statically stable system.) While paragraph 39 says 1 or more wheels, it does not teach 3 or more arranged into a statically stable system. Paragraph 39 of Kamen labels the vehicle motive arrangement as ***statically unstable*** and the rejection's assertion to the contrary is respectfully asserted to be an unfair mischaracterization of the Kamen reference and the claim language, using the present invention in impermissible hindsight.

Concluding that paragraph 40 teaches an arrangement of wheels into a statically stable arrangement is respectfully requested to be reconsidered. At best, Kamen appears to teach that a Kamen vehicle may be made "stable" while stationary even when it uses a statically unstable motive system. Of course to do this, one is required to have a control system as disclosed by Kamen or equivalent system that stabilizes the unstable system.

Further, the rejection fails to explain how the control arrangement of Kamen may be applied to a statically stable motive system – the control system is designed and arranged to detect shifts of a rider's center of gravity and a statically stable motive system is respectfully asserted to require a reconfiguration of the Kamen control system.

B) MOVEABLE RIDER PLATFORM AND SPEED/STEERING COUPLING

Claim 29 – "… a rider support for carrying a rider … [a speed control coupling] to enable said rider support to tilt [forward or backward] relative to lower components … [a steering coupling] to tilt said rider support in a generally side-to-side direction and in response to such tilting, steering said vehicle to the side in which said rider support is tilted when said vehicle rolls upon said riding surface…"

The rejection simply delineates: "a rider support having a steering control for enabling the rider to steer the vehicle by tilting side-to-side (page 8, paragraph 93)" AND "said rider support having a speed control for enabling the rider to modulate the speed of the vehicle by tilting forward or backward (page 8, paragraph 93);".

Page 8, paragraph 93 of Kamen:

> "In accordance with other embodiments of the present invention, leaning by user 12 may be used solely for governing fore-aft motion of vehicle 10, or, alternatively, leaning may be used solely for governing steering of the vehicle, or, for both functions."

This language simply says that the ***USER*** leans to effect fore/aft and/or steering. As noted before, a user may lean without causing the rider platform to move or tilt. The Kamen control system is designed to detect changes/shifts in a user's center of gravity and respond to those changes to control speed and/or direction.

The claimed rider platform moves relative to the motive system (both fore/aft and side-to-side) and the Kamen system employs a rider platform immovably secured to the motive system (which must not have relative movement to achieve some of the Kamen asserted advantages and features). In Kamen, a user leans and shifts the center of gravity, the control system detects the leaning, and then configures the vehicle accordingly. In Kamen, the control system may set a particular cant to vehicle appropriate to the detected user control information. In other words, in some embodiments the leaning of the user

(e.g., forward) is detected, the vehicle moves forward while the control system tilts the rider platform forward. However, the forward motion is not effected by the tilt of the rider platform as claimed. In Kamen, the rider platform does not move relative to the motive system and the tilting of the riding platform is not the cause that effects speed and/or steering.

The applicant respectfully asserts that the rejection fails to properly note the claim limitations of both a moveable rider platform and movement of the rider platform to effect speed and direction. The asserted language of paragraph 93 of a user leaning is respectfully asserted to be insufficient to meet the claim limitations. For example, it is the case that a user may lean over the edge of a building without causing the building to in fact lean.

Additional limitations:

SPEED CONTROL COUPLING

Claim 29 recites:

"a speed control coupling attaching said rider support to lower components of said vehicle and arranged to enable said rider support to tilt relative to lower components"

The rejection equates a forceplate recited in Kamen (page 5, paragraph 61) as equivalent to the claimed structure.

Paragraph 61:

> In accordance with other embodiments of the invention, handle 16 and grip 14 may be absent altogether, and the platform 12 may be equipped with sensors, such as forceplate 8, for example, to detect leaning of the subject. Indeed, as described in connection with FIG. 5 and as further described below, the pitch of the vehicle is sensed and may be used to govern operation of the control loop, so that if the subject leans forward, the vehicle will move forward to maintain a desired

> velocity or to provide desired acceleration. Accordingly, a forward lean of the subject will cause the vehicle to pitch forward and produce forward movement; a backward lean will cause the vehicle to pitch backward and produce backward movement. Appropriate force transducers may be provided to sense leftward and rightward leaning and related controls provided to cause left and right turning as a result of the sensed leaning.

While the point is subtle, the following includes applicant's current understanding of the operation of Kamen: A user LEANS, the control system detects the leaning, THEN the control system sets a forward/aft pitch and moves the vehicle in the appropriate direction. The user leaning does not directly affect pitch – in fact the control system may in some embodiments maintain the rider platform in an unpitched condition while moving forward, for example. The rider selects an operational mode of the vehicle among predetermined modes – for example by leaning forward. The control system determines which mode the user has selected and configures a pitch angle. Changes to speed do not necessarily include corresponding pitch change angles.

There is nothing to suggest that the forceplate is a moveable structure or what the arrangement of the components of the vehicle are with respect to the Kamen forceplate and the rejection does not indicate in what specific regard the forceplate is a speed control coupling, particularly with respect to its arrangement and function with other components other than a transducer to detect leaning.

Paragraph 61 is silent about roll attitude – there is no teaching or suggestion provided by the rejection discussing roll attitude change of the rider platform as set forth in the claims.

Amended independent claim 49 is respectfully asserted to be patentable for at least all the reasons set forth above. In addition, claim 49 is respectfully asserted to be patentable in its own right as it expressly includes user-defined variable pitch and roll motions, with magnitudes of speed and steering directly related to a magnitude of the pitch and roll motions of the rider platform.

The applicant further requests reconsideration of the rejection's assertion that a complex gyroscopic electronic control system may be replaced with springs. The rejection offers no support for this rejection of claims 36 and 48 and simply asserts such could be done and that such a substitution would be simple and inexpensive. The undersigned respectfully requests support for this position, including a reference showing such a substitution and how such a substitution could be done.

The applicant has been unable to speculate about operation and function of a Kamen vehicle and control with the asserted stable motive system. As noted above, none of the Kamen configurations suggest a statically stable vehicle. For example, the rejection fails to teach or suggest how a modified Kamen system, assuming *arguendo* that Kamen teaches or suggests three or more wheels in a statically stable configuration, would operate. Specifically, Kamen has a gyroscopic control detecting/setting pitch attitudes but it is respectfully asserted that Kamen would need to be modified in some unidentified way to provide the pitching system (pitching in Kamen is done by rotation about an axis containing the motive structures). A statically stable motive platform is respectfully asserted to require a wholly different control and physical arrangement.

The rejection of previously examined claims 29, 30, 32–42, and 44–55 under 35 U.S.C. Sections 102, 103, and 112 is respectfully requested to be reconsidered and withdrawn. In view of the above amendment and comments, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-3427, under Order No. 20056-7002 from which the undersigned is authorized to draw.

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Respectfully submitted,

Electronic signature: /Michael E. Woods/
Michael E. Woods
Registration No.: 33,466
PATENT LAW OFFICES OF MICHAEL E. WOODS
3433 Wheeling Drive
Santa Clara, California 95051-6034
(408) 490-4692
(408) 490-4693 (Fax)
Attorney For Applicant